FIG. 1

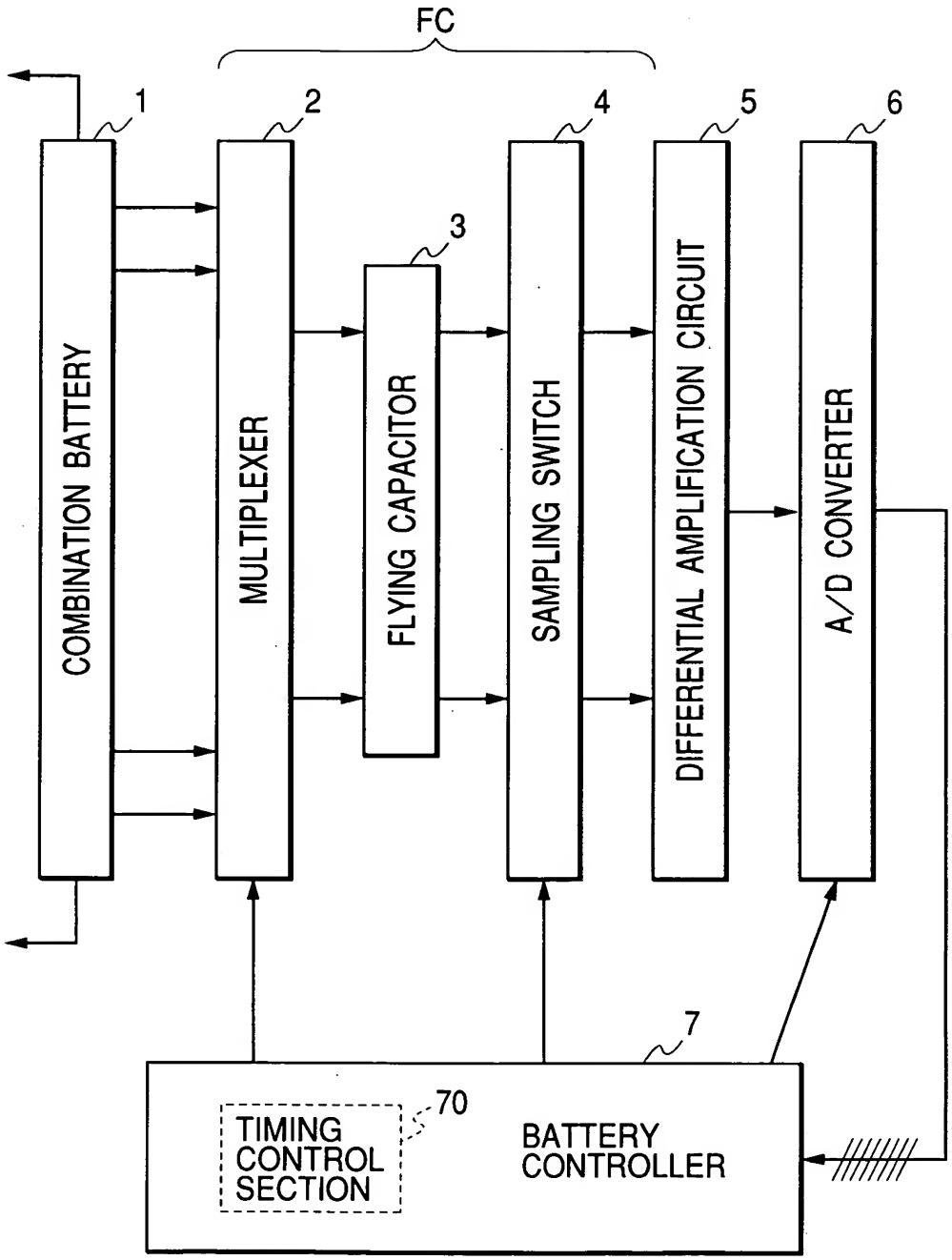

FC
1
2
3
4
5
6
7
70
COMBINATION BATTERY
MULTIPLEXER
FLYING CAPACITOR
SAMPLING SWITCH
DIFFERENTIAL AMPLIFICATION CIRCUIT
A/D CONVERTER
TIMING CONTROL SECTION
BATTERY CONTROLLER

FIG. 2

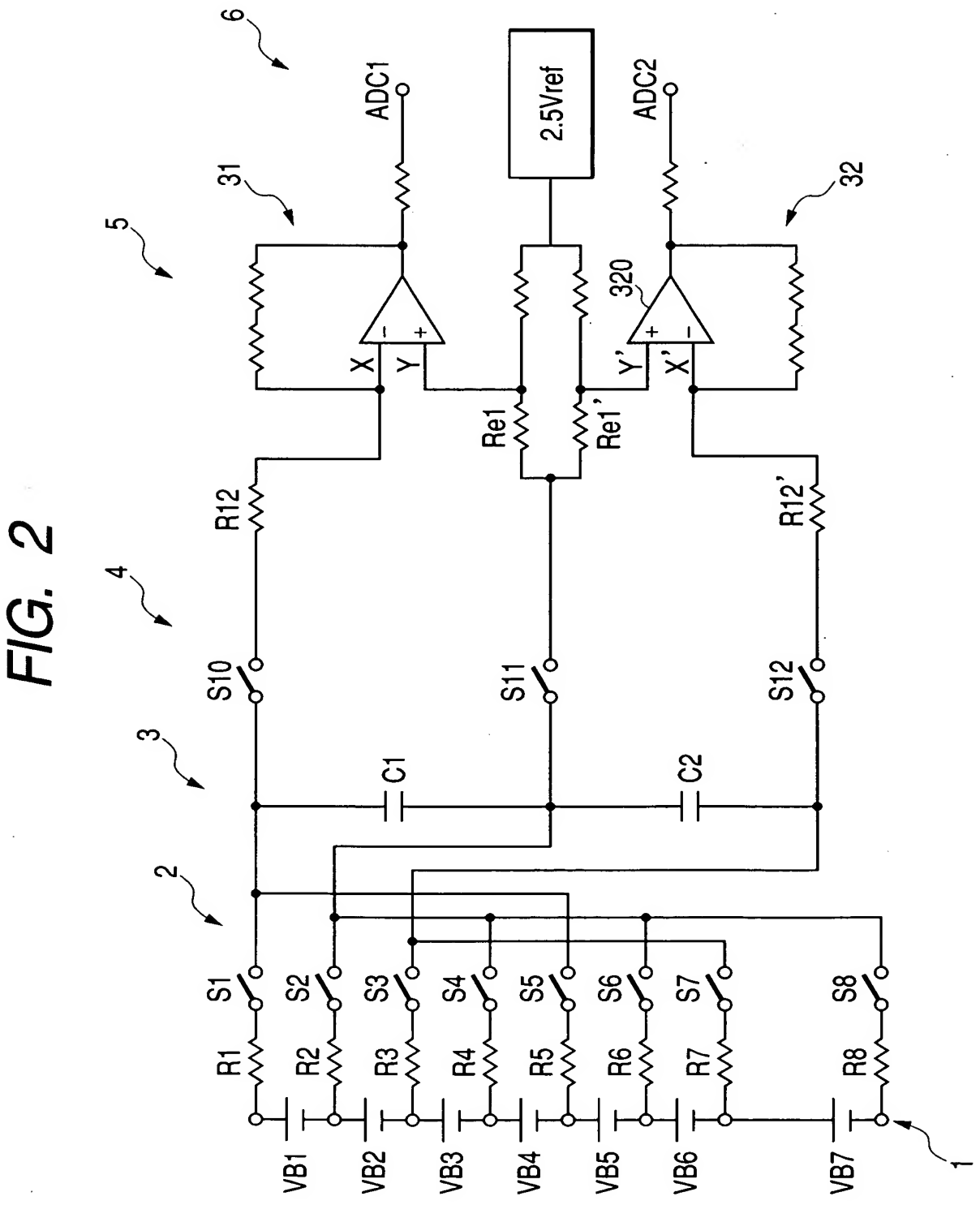

6
ADC1
2.5Vref
ADC2
31
32
5
320
X
Y
Y'
X'
Re1
Re1'
R12
R12'
4
S10
S11
S12
3
C1
C2
2
S1
S2
S3
S4
S5
S6
S7
S8
R1
R2
R3
R4
R5
R6
R7
R8
VB1
VB2
VB3
VB4
VB5
VB6
VB7
1

FIG. 3

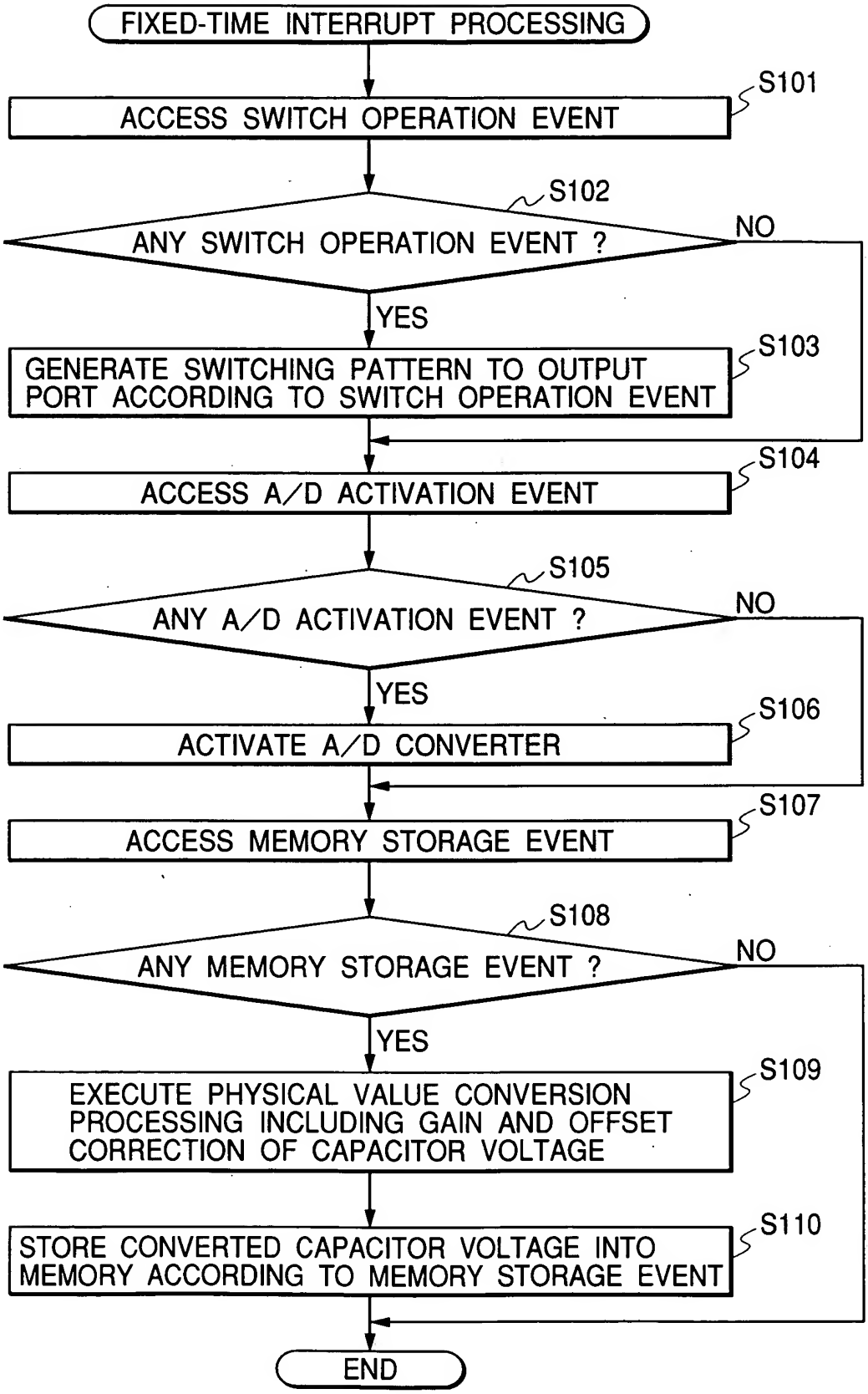

FIXED-TIME INTERRUPT PROCESSING
S101
ACCESS SWITCH OPERATION EVENT
S102
ANY SWITCH OPERATION EVENT ?
NO
YES
S103
GENERATE SWITCHING PATTERN TO OUTPUT PORT ACCORDING TO SWITCH OPERATION EVENT
S104
ACCESS A/D ACTIVATION EVENT
S105
ANY A/D ACTIVATION EVENT ?
NO
YES
S106
ACTIVATE A/D CONVERTER
S107
ACCESS MEMORY STORAGE EVENT
S108
ANY MEMORY STORAGE EVENT ?
NO
YES
S109
EXECUTE PHYSICAL VALUE CONVERSION PROCESSING INCLUDING GAIN AND OFFSET CORRECTION OF CAPACITOR VOLTAGE
S110
STORE CONVERTED CAPACITOR VOLTAGE INTO MEMORY ACCORDING TO MEMORY STORAGE EVENT
END

FIG. 4

FIXED-TIME INTERRUPT

TIME	SWITCH OPERATION EVENT	A/D ACTIVATION EVENT	MEMORY STORAGE EVENT
0	TURN ON S1 & S2 & S3	DO NOTHING	DO NOTHING
1	DO NOTHING	DO NOTHING	DO NOTHING
2	DO NOTHING	DO NOTHING	DO NOTHING
3	TURN OFF S1 & S2 & S3	DO NOTHING	DO NOTHING
4	TURN ON S10 & S11 & S12	DO NOTHING	DO NOTHING
5	DO NOTHING	ACTIVATE A/D1 & A/D2	DO NOTHING
6	TURN OFF S10 & S11 & S12	DO NOTHING	STORE A/D VALUE INTO "V1" & "V2"
7	TURN ON S3 & S4 & S5	DO NOTHING	DO NOTHING
8	DO NOTHING	DO NOTHING	DO NOTHING
9	DO NOTHING	DO NOTHING	DO NOTHING
10	TURN OFF S3 & S4 & S5	DO NOTHING	DO NOTHING
11	TURN ON S10 & S11 & S12	DO NOTHING	DO NOTHING
12	DO NOTHING	ACTIVATE A/D1 & A/D2	DO NOTHING
13	TURN OFF S10 & S11 & S12	DO NOTHING	STORE A/D VALUE INTO "V3" & "V4"
14	TURN ON S5 & S6 & S7	DO NOTHING	DO NOTHING
15	DO NOTHING	DO NOTHING	DO NOTHING
16	DO NOTHING	DO NOTHING	DO NOTHING
17	TURN OFF S5 & S6 & S7	DO NOTHING	DO NOTHING
18	TURN ON S10 & S11 & S12	DO NOTHING	DO NOTHING
19	DO NOTHING	ACTIVATE A/D1 & A/D2	DO NOTHING
20	TURN OFF S10 & S11 & S12	DO NOTHING	STORE A/D VALUE INTO "V5" & "V6"
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮

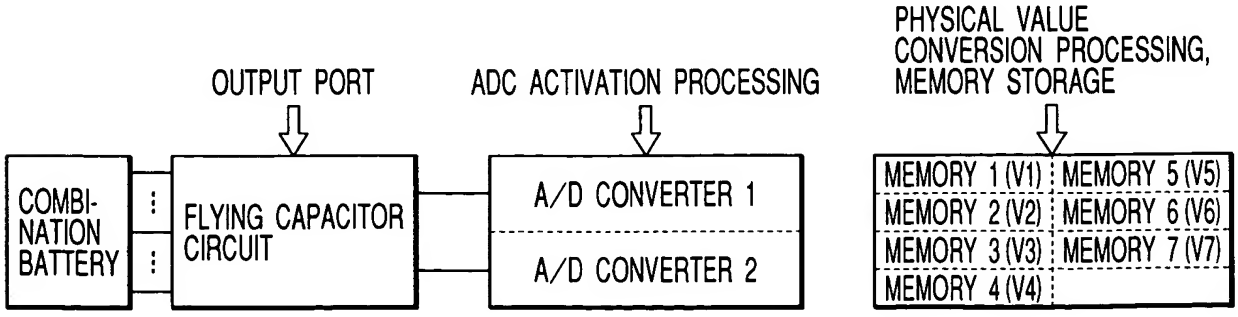


FIG. 5

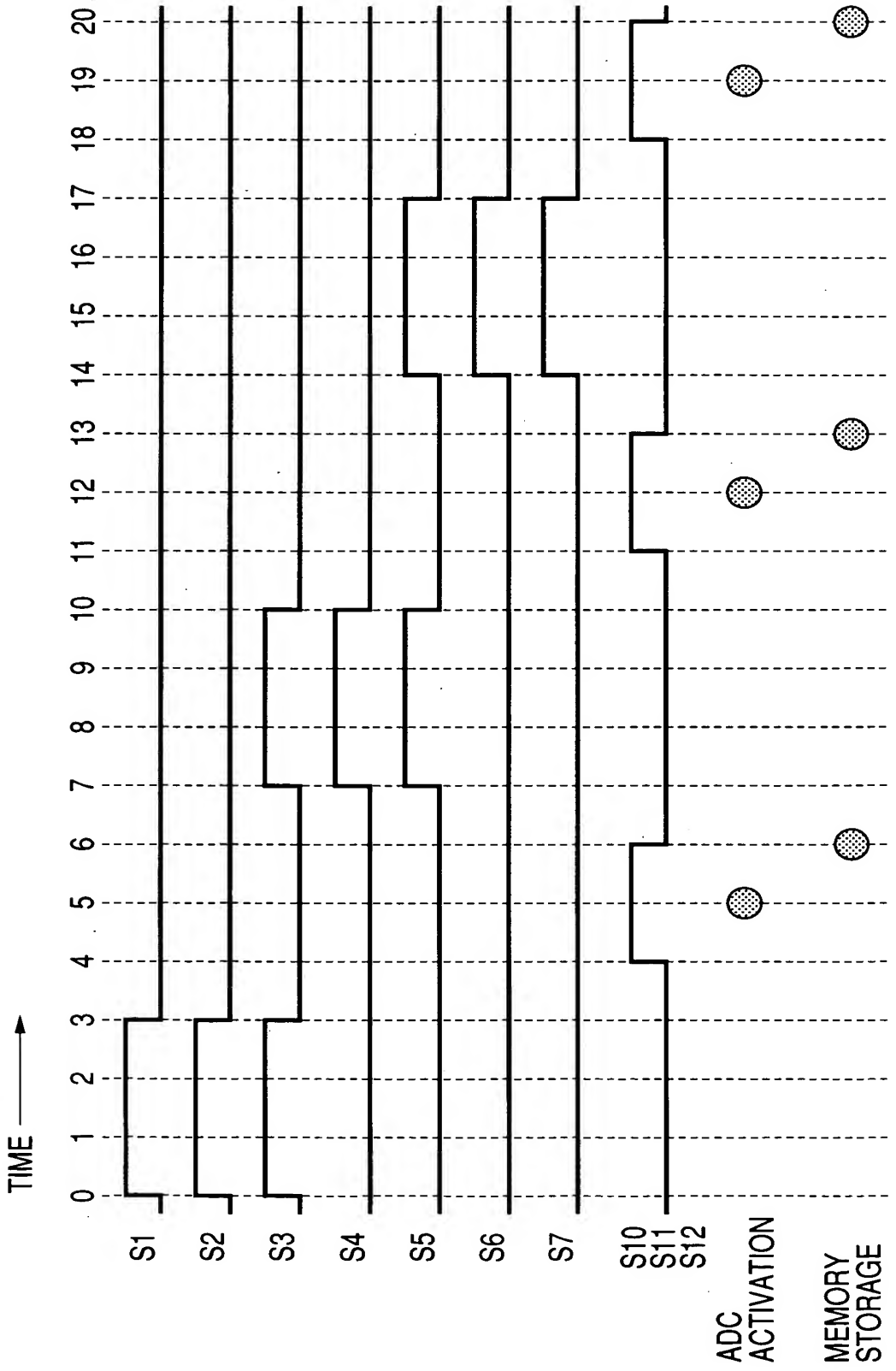
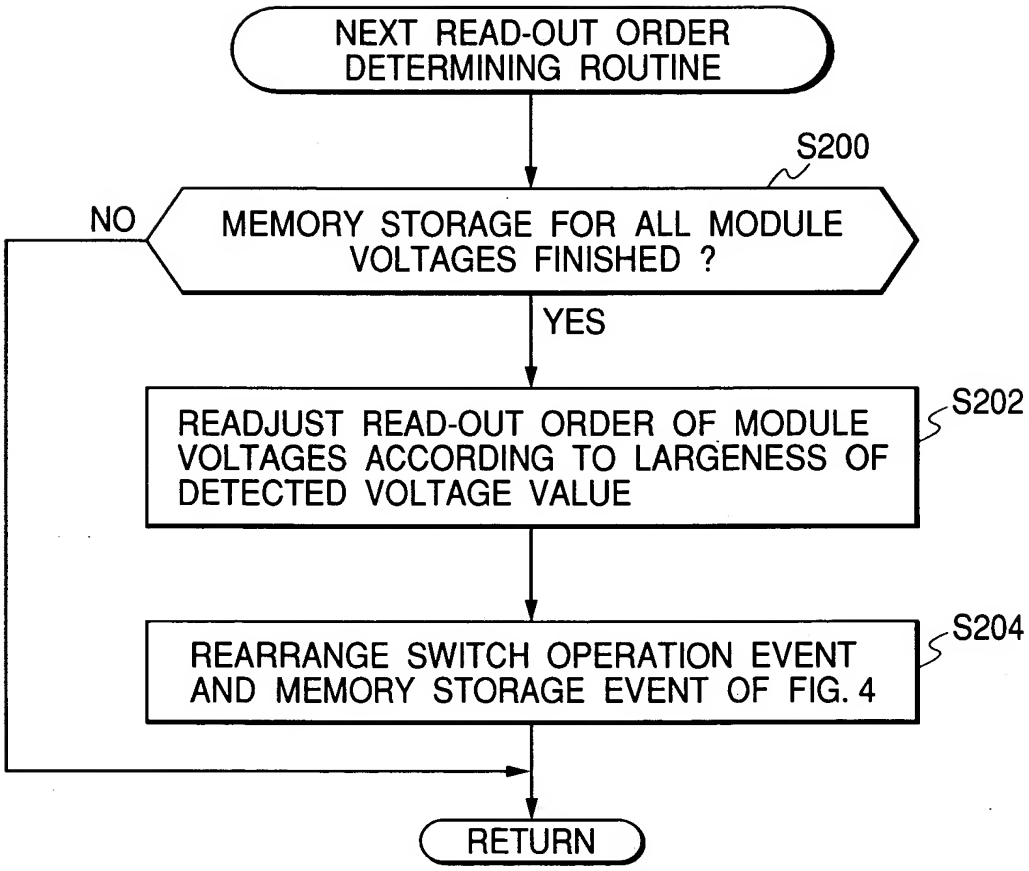

TIME
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
S1
S2
S3
S4
S5
S6
S7
S10
S11
S12
ADC ACTIVATION
MEMORY STORAGE

FIG. 6


NEXT READ-OUT ORDER DETERMINING ROUTINE
S200
NO
MEMORY STORAGE FOR ALL MODULE VOLTAGES FINISHED ?
YES
READJUST READ-OUT ORDER OF MODULE VOLTAGES ACCORDING TO LARGENESS OF DETECTED VOLTAGE VALUE
S202
REARRANGE SWITCH OPERATION EVENT AND MEMORY STORAGE EVENT OF FIG. 4
S204
RETURN